DECA20CR150C

Automatic line

Fully automatic mixing, conching and refining line designed for small and medium-sized productions.
For the production of 20 kg each batch of anhydrous products such as chocolate and compounds, spreadable creams, dried fruit pure pastes, fillings for pralines, bases for ice cream, etc.
The innovative “in continuous” system optimizes the process time of about 40%, compared to BATCH system: conching and refining are simultaneous.
Finesse can vary from 18 to 26 microns depending on the product characteristics and refining time.

LINE COMPOSITION:

- n. 1 conching machine CR150

capacity 150kg

- pipeline for the product’s recirculation in continuous between conching machine and balls mill
- n. 1 balls mill SFERA 20R
- n. lecithin automatic dosing time TD 10
- n. 1 electric panel control with SIEMENS PLC & TOUCH SCREEN 7’’

DECA20CR150C refining line is based on an innovative refining method for the production starting from the raw materials needed for obtaining the desired finished product.
After the manual loading of ingredients into conching machine CR150 by starting the automatic cycle, the line will start the processing phases (mixing, conching and refining) previously set in the recipe, until the discharging of the end product in the storage tank.

In the continuous solution, the ingredients of the recipe are loaded in the conching machine, then the product is continuously mixed from the conching machine to the mill, and then again in the conching machine, for the time set in the parameters of the recipe, conching and refining at the same time.

After processing, by means of a vane pump, it will be possible to discharge the product in a storage tank, passing through a vibrofilter (22/24 microns) that checks the fineness of the final product.
Finesse is determined by the process time of the SFERA20, programmable by the operator panel placed on the electrical panel

N° 1 CONCHING MACHINE CR 150
Conching machine mod. CR had been designed for satisfying at best aromatic chocolate ‘transformation’.
Here below a quick summary of the fundamental points for obtaining what above described:

1. PLASTICIZATION: that is to say the transformation of the product from lumpy into fluid through considerable ‘cutting’ efforts effected by a special horizontal agitator driven by a powerful motorization. In this phase air around solid particles are eliminated allowing the union with cocoa butter.
2. .DEHUMIDIFICATION and ACIDITY EXTRACTION: in this phase, the humidity and acetic acid (due to cocoa beans fermentation) are extracted from the product. With the progressive water elimination, viscosity is gradually reduced. This phase strongly affects the creation of the aroma and fluidity of the end product.

3. AROMA'S DEVELOPMENT: by submitting the product to a continuous aeration, some reactions occur (Maillard reaction) which cause the transformation of many compounds present in others having pleasant taste. The continuous homogenization of the product inside the conching machine, keeping a constant temperature in addition to the listed process, it allows to get a global equilibrated aroma.

Process temperature has got a fundamental role during all the phases. Actually, conching machine temperature never get over 60-70°C, for milk chocolate temperature is at 50-55°C. Such temperature grants the perfect fluidity of cocoa butter, a great water evaporation (acidity extraction) without producing unpleasant taste in the product.

Capacity: 150 kg

- completely realized in stainless steel AISI 304
- Double wall tank for thermoregulation
- N° 1 heating unit
- Central shaft with special stirrers for mixing
- Gear motor for controlling mixing shaft
- Hinged upper covering for making charging phase easier
- ACIDITY EXCTRACTING DEVICE: air heating unit which blows hot air inside the conching machine for helping extraction
- Discharging through a sphere pneumatic valve
- N° 1 pneumatic valve
- n° 1 vane pump for the product's feeding into balls mill through heated flexible pipeline
- n° 1 technological pipeline for the unloading of product from conching machine into balls mill

N° 1 BALLS MILL SFERA 20R

For the production of 20 Kg (each cycle) of spreadable creams, hazelnut paste, pistachio, almonds, pure chocolate or surrogate with a minimum percentage of fat material of 30%, for real chocolate 32-34%. Product can reach a thinness between 18 and 26 microns according to its characteristic and to refining time.
Refiner is composed by:

- Inner basin and bottom in special wear-resistant material
- External basin in stainless steel AISI 304
- Arm stirrer in anti-abrasion stainless steel
- Gear motor of 1,5 kW with speed control through an inverter
- Main structure in stainless steel AISI 304
- Product charging hopper
- N° 1 max level photocell of refining tank
- N° 1 manual throttle stainless steel AISI 316 for the total product's discharging
- Vane pump ID-P650 for product's recycling and discharging. Pump's body and top in hardened stainless steel AISI 420. Vanes in special anti-wear material, (double jacket body and top for thermoregulation), capacity 750 kg/h
- Reservoir of tank heating complete with thermo-regulator, resistance1 kW and circulator
- Independent cooling unit

- Electric panel in stainless steel AISI 304
- N° 2 3way valves will operate automatically charging, recycling and discharging product's phase

N° 1 TDL10 LECITHIN MICRO DOSING UNIT

Stainless steel AISI 304 dosing tank with geared pump for the lecithin dosing by weight in automatic into balls mill. Capacity approx. 10 kg. Alarm for lecithin minimum level controlled and set by touch screen.
Upper opening for loading.

N° 1 ELECTRICAL PANEL
Coloured electrical panel 7" and PLC SIEMENS for the management of all machine's functions, recipes memorization and all manual controls.
Electrical panel in stainless steel AISI 304 placed on the back side of SFERA 20R.

N° 1 BASEMENT
Installation will be placed on a basement with adjustable feet.
REFINING DECA 20 line will be assembled, electrically connected and tested by our warehouse.
Dimensions: mm 990x2000xh150

N° 1 REMOTE SUPPORT
Router with:
- n° 4 Ethernet doors
- VPN

For the remote assistance by IDEOTECNICA with internet connection and for the control of the line by customer from its OC (ex. from home or from office).

MACHINES WILL BE PLACED ON A WHEELED STAINLESS STEEL AISI 304 BASEMENT

PRODUCTION CHARACTERISTIC
- production per hour from 20 to 25 kg according to recipe.
- productions can change according to the raw materials and percentage used
- minimum percentage of fat material 28-30%, for pure chocolate 32-34%

Also sugar may change the hourly production capacity:
- Replacing crystalline sugar with icing sugar, refining time will be strongly reduced (to be verified with the fats used in the recipe)

PRODUCTION'S STEPS:
1. Manual loading of ingredients into conching machine CR150 (cocoa liqueur, cocoa butter, etc.).
2. Recipe selection from touch screen
3. Start automatic cycle by batch or in continuous. From this step, the refining line DECA 20 will works AUTOMATICALLY up to the end of product's quantity in the conching machine.

AUTOMATIC CYCLE

1. Automatic loading of the mixed/conched ingredients from CR150 to SFERA 20
2. Recipe selection from touch screen
3. Start automatic cycle by batch or in continuous
4. BATCH: discharging into storing tank and new step 1 – 2 – 3 up to the end of the ingredients.
5. CONTINUOUS: discharging into the end product tank

WORKING STEPS:

- manual charging of raw materials (150 kg as capacity)
- recipe settings

ATTENTION! If necessary, it will be possible to work with SFERA 20 loading ingredients into the refining tank directly, without using CR 150 conching machine.

SAVING TIME AND COCOA BUTTER

Continuous conching, mixing refining line allows to optimize both conching/mixing time and refining at the same time. With this kind of production, we have improved the total production's time of approx 40% compared to the previous technology.

This way of production grants a more efficient extraction of acidity and humidity from the product: product's particles become even smaller at any passage in the balls mill. Consequently, it is possible to obtain more fluidity using less cocoa butter.

Line can work in continuous or by batch (refining cycle) or just using balls mill without conching machine.

Machines need following connection which will be on customer's charge:

- Water system Ø ½"
- Water discharge Ø 1" (pour too much system)
- Air bar 5/6 100lt/min

Video DECA20CR150C

Electrical supply: 230V – 60 HZ
Installed power: 12kW approx.
Compressed air needed: 100 lt/min - 5/6 bar
UL Approved